AMENDMENTS TO THE CLAIMS

1. (Currently amended) A process of producing an aluminum material having an aluminum nitride (AlN) region on the surface thereof, comprising the [[steps]] step of:

~~preparing an aluminum material containing $CuAl_2$; and~~

plasma nitriding [[the]] an aluminum material comprising $CuAl_2$,

wherein the plasma nitriding step comprises applying to an atmosphere of a nitriding gas selected from the group consisting of NH_3, a mixture of N_2 and H_2, a mixture of NH_3 and an inert gas, and a mixture of N_2, H_2, and an inert gas, a pulse voltage of -50 V to -50 kV for a period of from 0.1 μs to 10 ms; suspending the application of the voltage for a period of from 0.1 μs to 100 ms; and repeatedly applying the pulse voltage and suspending the application of the voltage to thereby form an AlN region on the surface of the aluminum material.

2. (Original) The process according to Claim 1, further comprising a step of sputtering the aluminum material to remove Al_2O_3 present on the surface of the aluminum material prior to the plasma nitriding step.

3. (Previously presented) The process according to Claim 1, wherein the plasma nitriding step is carried out at -167 to 630°C.

4-5. (Canceled)

6. (Currently amended) The process according to Claim 1, wherein AlN is ~~produced~~ formed on the surface of the aluminum material at a rate of 0.05 μm/hour or more in the plasma nitriding step.

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7. (Currently amended) The process according to Claim 2, wherein the sputtering step is carried out using the aluminum material as the negative electrode by applying a D.C. voltage of -50 V to -4000 V [[in]] to an atmosphere of ~~chemically activated second nitriding gas~~ N_2 gas, or a mixture of N_2 gas and an inert gas.

8. (Previously presented) The process according to Claim 1, wherein $CuAl_2$ is contained in the AlN region of the obtained aluminum material.

9-20. (Canceled)

21. (Previously presented) The process according to Claim 1, wherein the AlN region has a thickness of 0.1 μm or more.

22. (Canceled)

23. (Previously presented) The process according to Claim 1, wherein the AlN region has a Vickers hardness (Hv) of 4 GPa or more.

24. (Previously presented) The process according to Claim 1, wherein the AlN region has a thermal conductivity of 100 W/mK or more.

25. (Previously presented) The process according to Claim 1, wherein the tensile fracture strength between the AlN region and the aluminum material is not less than the tensile fracture strength of the aluminum material and is 15 GPa or less.

26. (New) A process of producing an aluminum material having an aluminum nitride (AlN) region on the surface thereof, comprising the steps of:

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(a) sputtering an aluminum material comprising $CuAl_2$ to remove Al_2O_3 present on the surface of the aluminum material, wherein the sputtering step is carried out using the aluminum material as the negative electrode by applying a D.C. voltage of -50 V to -4000 V to an atmosphere of N_2 gas, or a mixture of N_2 gas and an inert gas; and

(b) plasma nitriding the aluminum material prepared as in step (a), wherein the plasma nitriding step comprises applying to an atmosphere of a nitriding gas selected from the group consisting of NH_3, a mixture of N_2 and H_2, a mixture of NH_3 and an inert gas, and a mixture of N_2, H_2, and an inert gas, a pulse voltage of -50 V to -50 kV for a period of from 0.1 μs to 10 ms; suspending the application of the voltage for a period of from 0.1 μs to 100 ms; and repeatedly applying the pulse voltage and suspending the application of the voltage to thereby form an AlN region on the surface of the aluminum material.

27. (New) The process according to Claim 26, wherein the plasma nitriding step is carried out at -167 to 630°C.

28. (New) The process according to Claim 26, wherein AlN is formed on the surface of the aluminum material at a rate of 0.05 μm/hour or more in the plasma nitriding step.

29. (New) The process according to Claim 26, wherein $CuAl_2$ is contained in the AlN region of the produced aluminum material.

30. (New) The process according to Claim 26, wherein the AlN region has a thickness of 0.1 μm or more.

31. (New) The process according to Claim 26, wherein the AlN region has a Vickers hardness (Hv) of 4 GPa or more.

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32. (New) The process according to Claim 26, wherein the AlN region has a thermal conductivity of 100 W/mK or more.

33. (New) The process according to Claim 26, wherein the tensile fracture strength between the AlN region and the aluminum material is not less than the tensile fracture strength of the aluminum material and is 15 GPa or less.

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